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On the Analytic Part of Univalent Harmonic Mappings

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Abstract In this article we obtain two sharp results concerning the analytic part of harmonic mappings $f = h+\overline{g}$ from the class $\mathcal{S}_H^0(\mathcal{S})$ which was recently introduced by Ponnusamy and Sairam Kaliraj. For example, we get the sharp estimate for $|\arg h'(z)|$ in the case when $|z| \leq 1/\sqrt{2}$ and obtain the sharp radius of convexity for h. Our approach is applicable to a more general situation. Finally, we determine simple condition on the analytic part of univalent harmonic mappings so that it is in H_p spaces for $0 < p < 1/3$.

Keywords Harmonic univalent and convex mappings · Rotation theorem · Schwarz–Pick Lemma · Koebe transform · Disk automorphism · Harmonic (analytic) Hardy spaces · Integral means

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